

**MW & BC Funded Projects
1974-75**

TITLE: Understanding and Abatement of Saline Seep

INSTITUTION: Montana State University

DEPARTMENT: Plant & Soil Sciences

RESEARCHERS: Bob Aeleson

AMOUNT FUNDED: \$5,000.00

OBJECTIVES:

- 1) Saline seeps are known to be serious management, economic and pollution problems of the northern Great Plains. Although our understanding of the cause, physical process of occurrence, and possible processes of abatement of saline seeps has increased markedly in the last few years, there are still many areas that need investigation. For instance, saline seeps have been investigated in only two areas of the state, the Highwood and Sidney areas. These two areas are quite different and it appears likely that other important areas of seeps are different from these two. Moreover, there are many unknowns even within these areas that have not been investigated.

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TITLE: Crop Rotation Strategies for Dryland Farming

INSTITUTION: Montana State University

DEPARTMENT: Plant & Soil Sciences

RESEARCHERS: Rick Rodden, Alice Jones

AMOUNT FUNDED: \$5,000.00

OBJECTIVES:

- 1) Develop optimal crop rotation strategies for dryland farming with consideration of saline seep hazards.

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TITLE: Resistance of wheat to stem rust caused by Puccinia graminis var. tritici

INSTITUTION: Montana State University

DEPARTMENT: Plant Pathology

RESEARCHERS: Greg Johnson, Jack Reisellman

AMOUNT FUNDED: \$11,076.00

OBJECTIVES:

- 1) Control stem rust of wheat by resistant varieties and incorporate genes conferring long-lasting resistance.

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TITLE: Development of control measures for soil-borne diseases of wheat

INSTITUTION: Montana State University

DEPARTMENT: Plant Pathology

RESEARCHERS: D. E. Mathre

AMOUNT FUNDED: \$12,500.00

OBJECTIVES:

- 1) To develop effective control measures for soil-borne diseases of wheat.

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TITLE: To develop cultural methods suitable for the continuous cropping of the drylands of Montana

INSTITUTION: Montana State University

DEPARTMENT: Research Centers

RESEARCHERS: Various/Don Baldrige

AMOUNT FUNDED: \$22,000.00

OBJECTIVES:

- 1) The development of continuous cropping systems to replace the present fallow system is a complex problem. Many unforeseeable conditions arise. Less time is available for seedbed preparation. More land will have to be seeded and harvested annually. Weeds and other pests will probably be more troublesome. The fertility moisture inventory, and plant population relationships will be more critical. The machinery, especially for seeding, will require modification. As seasons vary from year to year, more flexibility in respect to crop selection, methods of tillage, and method of harvest or crop utilization will be required.
- 2) In view of the above problems, it becomes nearly impossible for any one Research Center to conduct research on all facets of any changes. Thus, each Center will work on some phase of the problem with the hope that the farmers will be able to put together a system of continuous cropping that will be best suited for his conditions.

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TITLE: Resistance and/or tolerance of wheat to leaf and head blotch diseases

INSTITUTION: Montana State University

DEPARTMENT: Plant Pathology

RESEARCHERS: A. L. Scharen

AMOUNT FUNDED: \$5,232.00

OBJECTIVES:

- 1) Increase the quality and quantity of Montana wheats by holding losses from leaf spots and head blotch to a minimum.

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TITLE: Winter Wheat Improvement

INSTITUTION: Montana State University

DEPARTMENT: Plant & Soil Sciences

RESEARCHERS: G. Allen Taylor

AMOUNT FUNDED: \$12,000.00

OBJECTIVES:

- 1) Protein improvement.
- 2) Support short-term research efforts of winter wheat breeding project.

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TITLE: Correlation of crop response to fertilizer additives with soil properties, soil test results, and climate factors.

INSTITUTION: Montana State University

DEPARTMENT: Plant & Soil Sciences

RESEARCHERS: Jim Sims

AMOUNT FUNDED: \$10,000.00

OBJECTIVES:

- 1) The initial primary long-term goals of this project were to (1) to develop a system for recommending N fertilizer topdressing rates for dryland wheat based on data correlating response to N fertilizer with soil properties, soil test results and climatic data, (2) to develop a new effective soil test for available soil N. These goals have been achieved and the research results have been incorporated into fertilizer recommendation programs and soil test procedures in Montana and elsewhere. Other long-term goals pertain to similar research with potassium, sulfur, and phosphorus. This research is still in progress. However, the work with potassium is nearing fruition. Supplement No. VIII to the original agreement between MAES and MWRMC is based on the short-term goals given below which evolve from the research conducted to achieve our original goals.
- 2) Compare single to split applications of topdressed N as they influence yield, test weight, grain protein content,

amino acid distribution, and quality of winter wheat, spring wheat, and barley; (2) determine the influence of potassium applied at tillering and at heading on the amino acid distribution, and quality of winter wheat, spring wheat, and barley; (3) determine environmental impact of fertilizer use; (4) determine more realistic wilting point for small grains under Montana conditions.